

**BRUSHWELLMAN**  
ENGINEERED MATERIALS

*Aine fib*  
*Dave Wham*  
*Frank Jensen* ✕

Brush Wellman Inc.  
67 West 2950 South  
Salt Lake City, UT 84115  
Phone 801/467-5441

September 23, 1987

RECEIVED  
SEP 25 1987

DIVISION OF OIL  
GAS & MINING

Mr. Lowell Braxton  
Administrator, Mined Land Reclamation Program  
UTAH DIVISION OF OIL, GAS and MINING  
3 Triad Center, Suite 350  
Salt Lake City, UT 84180-1203


Dear Lowell:

Enclosed is a memorandum summarizing the August 19, 1987 meeting between you and your staff and Brush Wellman representatives. Please review the memorandum and contact us if the recollections of you or your staff differ from the conclusions and agreements summarized in the memorandum.

Thank you for your cooperation in this matter.

Sincerely yours,

BRUSH WELLMAN INC.

  
Kenneth Poulson  
Vice President  
Mining & Exploration

KP/dt

Enclosure

*✕ Frank: please look this  
over, and discuss in our next  
appropriate team meeting.  
Thy  
Lance*

RECEIVED

SEP 25 1987

DIVISION OF OIL  
GAS & MINING

September 18, 1987

MEMORANDUM

TO: Robert Bayer

FROM: Brian Buck

RE: Minutes of August 19, 1987 meeting between Brush Wellman and the DOGM.

Attendees:

Lowell Braxton, DOGM  
Sue Linner, DOGM  
Frank Jensen, DOGM  
Randy Hardin, DOGM  
Lynn Kunzler, DOGM  
James Leatherwood, DOGM  
Lee Davis, Brush Wellman  
John Gray, Brush Wellman  
Bob Bayer, JBR  
Brian Buck, JBR

On August 19, 1987, the above attendees met at the offices of the DOGM to discuss the July 21, 1987 DOGM comments on the Brush Wellman Draft Reclamation Plan submittal. These are the minutes of that meeting as recorded by Brian Buck.

Rule M-3(2)(e)-(LK)

R. Bayer described Brush's position that all of the outer slopes of future dumps will be covered with coarse rock fragments, thus Brush will follow the DOGM recommendation that mulch not be incorporated on all of these slopes.

L. Kunzler agreed with this position.

R. Bayer asked if mulch would be required on the top surfaces of the topsoiled dumps if they are left in a rough condition following soil spreading with scrapers.

L. Kunzler agreed that he has seen reclaimed surfaces where pitting without any mulch has been more successful than mulching alone. It is possible that mulching any of the surfaces at Brush could have a detrimental drying effect on the soil unless the mulch was incorporated into the soil. If erosion control can be effected without mulching, it might be worthwhile for Brush to try reclaiming a portion of a dump without mulch to test its effectiveness.

F. Jensen said that mulch will not be as important at Brush as careful control on the depth of the seed placement. With chaining of rough surfaces it is possible to bury the seed too deep. He suggested that the topsoiled surfaces be lightly

scarified with a harrow, or the equivalent, prior to broadcasting the seed and then chaining the seed into the soil very lightly. Light chaining is best accomplished with pulling tire chains or chain-link fence instead of heavy chain or rails.

L. Davis said that these were all good ideas and Brush would try them.

R. Bayer said that the text of the final application would be revised slightly to reflect these suggestions.

#### Rule M-5 Bonding

R. Bayer said that Brush was currently preparing a reclamation cost estimate to be submitted to the DOGM following tentative agreement by both parties on the proposed reclamation plans. It is assumed that the DOGM does not need these estimates to pass preliminary approval of the reclamation plan.

R. Hardin agreed with this.

R. Bayer asked Mr. Hardin what level of detail he was expecting to approve the reclamation cost estimate.

R. Hardin said that he did not need any more design detail but rather will expect to see the backup calculations for all bond cost estimates. He will evaluate the reclamation cost estimate on a series of five year periods through the mine life.

R. Bayer said that the cost estimate will be for the life of the mine with expenditures estimated for individual phases of reclamation and bonding which will facilitate Mr. Hardin's five-year evaluations.

R. Hardin said that this approach would be fine.

#### Rule M-5 and M-10 Maps

R. Bayer asked for a clarification of Mr. Hardin's request for additional maps because this topic was discussed at the last meeting when Brush described that the requested maps were not available.

R. Hardin said that he was concerned primarily about the final configurations of the open pits upon completion of mining. The characteristics of prime interest were the pit depths, bottom areas, top areas, slopes, and access roads. He suggested that Brush provide these topographic maps upon cessation of mining for the DOGM review.

L. Davis described the level of mapping conducted during the normal course of mining. The area of a proposed pit and waste

dump is first flown and detailed topo maps are prepared, then the pit is again flown and mapped following the contract stripping. Brush then lifts out the remaining overburden and ore without producing any additional topo maps. The result of this practice is that the final configurations of the pits are not represented on the detailed topo maps in Brush's possession and to do so will require additional flights and mapping which to date has not been required. He said that Brush would be willing to provide the DOGM with the topo maps as described above if they would suffice. He asked if this would be suitable detail.

R. Hardin said that he felt that maps showing the final configuration of the pits and dumps would be required for the DOGM to assure that the reclamation plan was being followed. He suggested that perhaps Brush could take the topo maps as described and modify them to show the final configurations of the pits and dumps.

L. Davis said that this would require using a survey crew and would be very time consuming and probably more expensive than re-flying. He said that Brush has found out from Olympus Aerial Surveys that the production of a topo map for all of the pits and dumps would cost approximately \$25,000 each time.

L. Davis suggested that when Brush flies an area for future pit development, aerial photos could be taken of the older pits that are mined out. Brush would be willing to occasionally fly the property and provide copies of inked photo prints delineating the areas of interest.

S. Linner said that the DOGM would be satisfied with the inked photo prints as described by Mr. Davis.

R. Hardin suggested that Brush utilize the photos to produce manuscript quality topo maps and that the control required would not be critical.

B. Buck said that the DOGM would have to inspect the areas proposed by Brush for bond release occasionally during the operations and could determine directly if there were any problems without topo maps of the facilities. If any potential compliance problems were discovered, the DOGM could require Brush to provide survey or map data to resolve the issue, thus the preparation of topo maps on a routine basis might be avoided.

L. Davis said that Brush has a surveyor on site and would be willing to provide measurements of slopes. Areas will be measured from aerial photographs.

L. Braxton said that he did not see the need for the preparation of detailed topo maps under the condition that Brush occasionally provide inked aerial photos of the property in the

annual reports, as available.

R. Hardin said that Mr. Braxton's position would be acceptable and suggested that if Brush does fly the property it should place suitable ground control so that topo maps could be prepared if Brush desired.

L. Davis said that Mr. Braxton's position would be acceptable to Brush.

Rule M-10 (12)-LK

Mr. Bayer said that Brush did not fully understand Mr. Kunzler's comment; particularly whether the comment pertained to only the future areas proposed by Brush for revegetation or all areas, including the tuff-covered areas.

L. Kunzler said that he approves of the reseeding mixtures and techniques for the future topsoiled and rock-covered areas. He said that his comment on utilizing potential future revegetation techniques pertains primarily to the future tuff-covered areas. He mentioned that there has been some recent research on reclamation of bentonite mine wastes using heavy applications of sawdust as a soil amendment. These or similar techniques may be applicable to the Brush Wellman dumps. He asked if there was a sawmill in Delta.

F. Jensen answered that the closest sawmill to the Brush site was in Panguitch and that this may not be a suitable source of mulch. (This is approximately 200 miles away)

B. Buck said that the field studies done by JBR at the Brush testplots have conclusively indicated that the tuff material is very deleterious to plant growth and would require heavy application of soil amendments and irrigation water to reclaim. The soil report prepared by JBR was reviewed by Dr. Jurinak of Utah State University who concurred with the JBR conclusions. Mr. Buck said that the testplots were installed to demonstrate how the tuff should be revegetated and the parties should now view the present data base as sufficient to show that the tuff cannot be revegetated using reasonable measures.

L. Kunzler asked who designed and installed the testplots.

B. Buck answered that the DOGM designed the testplots, selected the plants and seeds, and assisted in the installation of the testplots. The soils analyses acquired by the DOGM at that time indicated that there would be problems with the soil chemistry.

L. Kunzler said that regardless of the test plot data, he

was still uncomfortable with giving a variance for the reclamation of the tuff-covered areas.

R. Bayer said that he wanted to make sure that the DOGM understood Brush's position on this matter which is that the tuff has been shown to be impossible to revegetate, therefore Brush has revised its mining plans to eliminate future exposures of tuff at the surface. Brush is doing this after recognizing that it was a mistake to have spread the tuff over the tops of the dumps in the first place but did not know this until recently. Brush feels that the DOGM should understand that the variance requested is only for the present tuff-covered dumps and not for future dumps.

L. Braxton said that he felt the DOGM and Brush had both made mistakes in the past by allowing the use of tuff as a cover for the dumps. Inasmuch as Brush has proposed to revise its mining techniques to rectify the problem for future pits he said that he did not feel Brush should be liable to revegetate the present tuff-covered dumps.

L. Kunzler said that he had not understood that Brush had revised its mining plans to eliminate future tuff-covered dumps and that the requested variance was only for the existing tuff-covered dumps. In that case, he agreed with the proposed strategy to provide relief from revegetating the existing dumps if the DOGM could show by field examinations that the potential for revegetation was not a reasonable expectation. He suggested that the DOGM visit the site to verify the data presented by Brush and if the DOGM agreed that the dumps could not be revegetated the variance would be approved.

The then discussion turned to setting up the field visit as soon as possible. It was agreed that F. Jensen would visit the property and meet L. Davis on Monday, August 21, 1987.

#### Rule M-10(14)-JSL

R. Bayer said that the proposed DOGM requirement that, "any suitable soil materials encountered" in the stony soils area be salvaged needs to be further defined. This is because the soils in this area exist as small, isolated pockets which are very difficult to salvage with normal mining equipment and that Brush hopes that the DOGM would not expect it to utilize extraordinary techniques to salvage this material.

J. Leatherwood answered that his intent in this requirement is that Brush use normal mining equipment and techniques to salvage any soils that are amenable to removal by same. He does not intend to require Brush to take extraordinary techniques, such as use of small equipment or hand methods, to salvage this soil.

L. Davis said that future pit stripping contracts would include language requiring salvage of this topsoil, "as is reasonable using the normal stripping equipment and operating techniques".

There being no further issues for discussion, the meeting was adjourned.